Experience of Pediatric Patients with Mini-Implants undergoing Orthodontic Treatment
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Abstract:
Background: Mini-implants are gaining achievement in orthodontics procedures as they provide maximum anchorage. The study was planned to evaluate different experiences with mini-implants among pediatric patients.

Materials and Methods: This study was done among 86 patients with a mean age of 14±23 years. All the participants were interviewed with the help of a questionnaire containing information experience during treatment with mini-implants, acceptance rate of mini-implants, complications faced during procedure and satisfactory results with the treatment. Visual analog scale (VAS) was used to record pain parameters. The data were analyzed by SPSS 16.0 software. Nonparametric test was applied to obtain the median of VAS scores.

Results: Most of the patients face problems with mini-implants during mastication of food (28.2%) and speech (23.6%). It also leads to poor oral hygiene in 16.4% of the subjects. The highest VAS scores were traced from the period of one to 20 h, i.e. (33.7-40.2). It was observed that most of the subjects get adapted to the mini-implants in 5-10 days.

Conclusions: It is safe and sound to use mini-implants as an orthodontic anchorage device among patients undergoing orthodontic treatment. Mini-implants are unquestionably accessory tools for treatment of orthodontists and ought to be utilized in selected cases demanding greatest anchorage.

Key Words: Mini-implants, orthodontics, pediatric patients
Dental Sciences. Prior to the collection of data, ethical approval was obtained from the institute and informed consent was taken from all the participants or their guardians.

All the willing participants in whom mini-implants were fixed were included in the survey and participants with cleft lip and palate and with medical problems were excluded. A pre-tested survey was done among a 10 subjects in order to make sure the level of validity.

In this survey, all the participants or their guardians were interviewed with the help of a questionnaire containing information as experience during treatment with mini-implants, acceptance rate of mini-implants, tolerance, complications faced during procedure, and satisfactory results with the treatment.

Every subject was asked to complete a questionnaire with eight sections from 1 to 8 according to the severity of discomfort with visual analog scale (VAS). Discomfort level was noted at different intervals of time. The data were analyzed by SPSS 16.0 software. Nonparametric test was applied to obtain the median of VAS scores.

**Results**

The total study sample was 86 whom mini-implant was fixed with orthodontic appliances. The participants were categorized as boys (41) and girls (45) with a mean age of 14±23 years. After fixing the mini-implant, most of the patients showed satisfactory results with time (86.4%).

In the present study, the most disagreeable feeling experienced was due to the pressure of mini-implants on the teeth surface (42.6%) followed by the time of insertion when the implant is placed in the bone (36.5%). Few subjects feel unpleasantness at the time of removal of the implant (20.9%) as shown in Graph 1.

Graph 2 shows that most of the patients face problems with mini-implants during mastication of food (28.2%) and speech (23.6%). It also leads to poor oral hygiene in 16.4% of the subjects. It causes injuries in 10.6% of the participants. Less number of participants showed its relation to poor esthetics (6.5%).

The highest VAS scores were traced from the period of 1 h to 20 h, i.e. (33.7 to 40.2). After this time, the scores declined as 15.7 after 1 week, 8.2 after 2 week, and 2.3 after 1 month (Graph 3).

After the placement of mini-implant, the immediate effect noticed by the patients is the pressure on the tooth surface (31.3%) followed by pressure on mini-implants (26.5%). Some felt discomfort in the jaw bone (18.7%) and hard palate (14.6%) as mentioned in Graph 4.

Graph 1: Most disagreeable experience with mini-implants.

Graph 2: Complications faced by subjects with mini-implants.

Graph 3: Visual analogue scale of pain after placement of mini-implants.

It was observed that most of the subjects get adapted to the mini-implants in 5-10 days, i.e. 37.4%, followed by 29.6% in 10-15 days. <20% get used within 5 days. Few participants showed the normal response with implants after 15 days as shown in Graph 5.
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Discussion

Anchorage is the resistance to unwanted movement of the tooth. The increased use of TADs (mini-implants) has developed to decrease the risks of patient compliance in the wish of providing supplementary outcomes. They also provide increased flexibility in supporting the tooth movements with conventional appliance mechanics.

The level of pain after placement of the mini-implant was seen maximum from 1 to 20 h and the peak declined after 1 week. The result of the present study was similar with a study done by Kuroda et al., 2007. This drop in pain level could be brought by the restraint of supporting soft tissues.

Regarding the most disagreeable experience with mini-implants felt by patients was the pressure of implant followed by its placement. However, Bustamante et al. showed that numbness from the anesthetic was mentioned by 20%, pressure from mini-implant fixation by 40% and the too lengthy procedure was mentioned by 10% of patients. The fact behind the pressure of mini-implant is perfectly understandable, as it was a new procedure and unknown for the patients. It had been suggested by the orthodontist with the aim of facilitating the orthodontic treatment. Even after consenting to the procedure, patients felt some psychological discomfort, even though no pain had been said.

When the experience of mini-implants was observed, mastication and speaking problems were commonly seen in the participants. But, Bustamante et al. showed that the oral hygiene difficulties were mentioned by 40%, mastication difficulties by 10%, psychological pain by 10%. In spite of the huge contribution of these mini-implants, they pose complexities related to surgical procedures and discomfort level to the patients. Notwithstanding these barriers, patients should be informed in advance that surgical procedures are simple and are performed under local anesthetic. In addition, procedure efficiency is improved and time is shortened.

The study showed that most of the patients adapted to these mini-implants for 5–15 days, as the pain subsides with time and structures supporting implant get stabilized with the implant. The time required to adapt mini-implants ranged from 5 to 15 days. Bustamante et al in their study mentioned that patients required around 10 days to get used to implants. 60% were entirely adapted by 3rd day after surgery, whereas others required a longer duration of time.

Conclusions

The study showed that most of the participants were satisfied with mini-implants as it accelerates the treatment. Mostly, discomfort level was noted by the pressure of mini-implant. Later on, it also leads to chewing, speaking, and hygiene problems. The peak level of pain was from 1 h to 1 day, and most of the subjects get used to the implants within 20 days. Mini-implants are unquestionably accessory tools for treatment of orthodontists and ought to be utilized in selected cases demanding greatest anchorage.

References